FRACTURE ALIGNMENT DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

A fracture alignment device to immobilize a patient's limb during a surgical procedure.

2. Description of the Prior Art

There is present need to stabilize a fractured arm or leg to allow a surgeon ready access to the injured limb during a surgical procedure.

The following examples fall short in one or more aspects dictated by such medical situations.

U.S. Pat. No. 6,318,372 discloses a vacuum activated veterinary surgical positioning system for supporting and retaining the body of a four-legged animal in a selected position. The system includes a bag made of flexible, air impermeable material having top and bottom opposing walls air impermeably joined at their upper, lower and lateral edges. A charge of elastically deformable plastic beads is disposed within the bag. A valve communicating with the interior of the bag is provided for evacuating air therefrom to cause the beads to interengage to form a rigid structure and immobilize the animal's trunk in the selected position when the bag is firmly packed against the trunk. Finally, a strap is attached to each of the corners of the bag for attachment to each of the animal's legs to retain the leg in a desired position.

U.S. Pat. No. 6,226,820 teaches a gel pad assembly comprising a flexible gel pad and an adjustable shape retainer integral with the gel pad. A flexible first outer wall cooperates with a flexible inner wall to form a first chamber. A gel is located within the first chamber. A flexible second outer wall cooperates with the inner wall to form a second chamber coextensive with the first chamber. The integral shape retainer is located within the second chamber and is selectively adjustable between a flexible condition wherein the flexible walls are conformable to a variety of desired shapes and a rigid condition wherein the flexible walls are retained in a selected one of the desired shapes.

U.S. Pat. No. 5,121,756 shows a vacuum immobilizer support comprising an elongated, flexible casing having neck, thoracic and pelvic regions. An evacuation valve is provided to allow the casing to be converted from a flexible state to an evacuated state. Stiffener sections are provided in the casing to prevent transverse bending of the casing in the neck, thoracic and pelvic regions. The stiffener sections allow transverse bending along an axis between the thoracic and pelvic regions. An intermediate stiffener section is provided to prevent longitudinal shortening of the casing between upper and lower stiffener sections. Discrete elements are disposed within the casing and allow the casing to conform to a patient when in its flexible state and to be rigidly fixed when in its evacuated state.

U.S. Pat. No. 6,793,639 describes a pelvic splint for immobilizing and maintaining the annular integrity of the pelvis in the event of a pelvic ring fracture extending from the iliac crest down to about the middle third of the thighs and substantially encircles the pelvis of the victim. The splint is secured about the pelvis of the victim with two or more adjustable straps. The splint comprises a flexible casing having at least one pliable padding layer disposed therein and a plurality of flexible members individually disposed in pockets spaced apart about the casing. Once tightly secured around the pelvis by the adjustable straps, the splint conforms to the contours of the victim's pelvic area and stabilizes the pelvis by preventing lateral movement and constraining the pelvis in such a manner to preserve the annular integrity thereof.

U.S. Pat. No. 4,378,009 shows a brace comprising an elongated, elastic tube to a person's knee or other part of the body. The brace is wrapped about the knee in a criss-cross fashion wherein four diagonal members intersect at four points surrounding the knee cap, i.e., top, bottom and each side. The brace is held in place by tape, velcro or other fastening means. The brace may be solid or inflated with air or another suitable fluid until a comfortable, protective pressure is reached within the elongated tube. When properly positioned and filled, the brace supports the knee or other body member.

U.S. Pat. No. 5,435,009 relates to an inflatable garment applying compression to a limb for the treatment of vascular disorders. The garment is made with an inflatable chamber of superimposed layers of sheet material. Side portions of the blank are joined together in the garment to encompass the foot. An inflatable tongue is located to lie under the foot. The side portions of the blank and the tongue form intercommunicating inflatable sacs. The tongue itself is not laterally joined to the side portions of the blank.

U.S. Pat. No. 5,569,176 teaches a cervical traction and exercise device secured about the head and neck for imparting the desired lordotic shape into the cervical region of the spine and manipulating the spine and surrounding tissue to promote fluid and cellular exchange in and around the intervertebral discs. The device includes a frame, an upstanding neck support carried by the frame, an inflatable elongated bladder carried by the neck support, restraining straps for securing the device to the user's head such that the bladder is disposed below and adjacent the user's neck, and means for selectively inflating and deflating the bladder to force the cervical spine to curve forwardly and apply angular traction to the spine.

U.S. Pat. No. 6,306,112 discloses a therapeutic ankle support brace bladder pad member including an inflated air support pocket and a second support pocket containing gel material. An overlay fabric material is integrally attached to the bladder to provide additional support and enables removable attachment of the bladder to side support members of a therapeutic brace.

U.S. Pat. No. 6,918,393 relates to a device for supporting and stabilizing an injured person. Comprising a flexible film element whose two films define an air-tight inner space can be evacuated and in which loose particle-containing chambers are provided. The device comprises a torso part and a head part that is provided on both sides with shoulder rests.

U.S. Pat. No. 7,771,376 shows a massage device for massaging comprising an inflatable garment having a plurality of inflation bladders to apply pressure to a body part and an inflation assembly includes a manifold into which the pressurized fluid flows. A plurality of inflation valves control the flow of fluid from the manifold to the bladders. A manifold valve controls the maximum pressure level within the bladders. The inflation assembly may have a predeterminated inflation capacity which defines a maximum bladder size as well as an array in which the bladders are arranged.

U.S. Pat. No. 7,871,387 describes a compression apparatus comprising a sleeve configured for disposal about a limb. The sleeve comprises a first portion defining a first expandable chamber and a second portion defining a second expandable chamber and a third expandable chamber. The second portion includes a connector in fluid communication with a pressurized fluid source and the chambers thereby facilitating fluid communication between the pressurized fluid source and the chambers. The first portion is removable from the second portion. The first portion may be connected to the second portion through a perforated attachment.

US 2006/0189907 relates to a soft, light-weight brace for a patient's limb PL to provide prophylactic support to a patient